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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,430

09/01/2006

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EXAMINER

TRIEU, THERESA

ART UNIT

PAPER NUMBER

3748

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No.		Applicant(s)	
	10/591,430		OHMI, TADAHIRO	
	Examiner		Art Unit	
	Theresa Trieu		3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>Sept. 1, 2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment filed on Sept. 1, 2006 is acknowledged.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "each having a substantially *hollow-cylindrical shape with one end closed*, each having a *plurality of helical land portions and a plurality of helical groove portions*, and adapted to rotate about substantially parallel two axes while meshing with each other" recited in claim 1; "rotor cylinder" recited in claims 1, 3, 6 and 11, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

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renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "6" has been used to designate both 'gas introduction port' (see para. [0035], line 5) and "bearing member" (see para. [0035], lines 6 and 7). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the cylinder" in line 6; claim 12 recites the limitation "the exhaust side; the bearing side" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Dahmlos et al. (Dahmlos) (Patent Number 5,924,855) in views of Kaneto et al. (Kaneto) (Publication Number JP 61-043298).

Regarding claim 1, Dahmlos disclose a vacuum pump comprising a pair of screw rotors 8 each having a substantially hollow-cylindrical shape with one end closed, each having a plurality of helical land portions and a plurality of helical groove portions, and adapted to rotate about substantially parallel two axes while meshing with each other; a casing receiving therein the pair of screw rotors; a pair of shafts 20 provided so as to extend from the closed ends on the cylinder inside of the pair of screw rotors, respectively, and supporting the pair of screw rotors, respectively; and a pair of bearing members 7 each having a substantially hollow-cylindrical shape and disposed between inner circumferential surfaces of rotor cylinders of the pair of screw rotors and outer circumferential surfaces of the pair of shafts 20, respectively, the pair of bearing members having bearings at inner circumferential surfaces thereof, respectively. However, Dahmlos fails to disclose a shaft seal structure.

Regarding claim 1, Kaneto teaches that it is conventional in the art to utilize a shaft seal structure 16a, 16b being provided around an outer circumferential surface of the bearing member 5 located on the cylinder inside of each of the screw rotors; the shaft seal structure forming a static pressure seal, and a seal gas 12, 14, 13 being introduced between the outer circumferential surfaces of the bearing member 5 and inner circumferential surfaces of the rotor cylinders of the rotors 4 through the bearing members. With regard claims 2, 3, 6 and 7, Kaneto further discloses each of the screw rotors 4 is centered with respect to the bearing member 5 by the introduced seal gas 12, 14, 13; the shaft seal structure 16a, 16b comprises a substantially hollow-cylindrical

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shaft seal member installed in a concave portion circumferentially formed on the outer circumferential surface of the bearing member 5 and the shaft seal member is not in contact with the inner circumferential surface of the rotor cylinder during the stationary operation; the shaft seal member has a seal gas passing port 3 opened in a radial direction and the seal gas is introduced between the outer circumferential surface of the bearing member and the inner circumferential surface of the rotor cylinder of the screw rotor through the shaft seal member from the bearing member 5; the seal gas passing port 13 is provided at a position in a cylinder axis direction of the bearing member 5 where back diffusion of the seal gas does not occur either to a screw rotor side 4 or to a bearing side 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the shaft seal structure, as taught by Kaneto in the Dahmlos apparatus, since the use thereof would have prevent the leakage.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claim 1 above, and further in view of Honma (Publication Number JP 2001-056027).

The modified Dahmlos device discloses the invention as recited above; however, the modified Dahmlos device fails to disclose a material which made of the pair of shaft seals.

Honma teaches that it is conventional in the art to utilize the pair of shaft seals each comprise a porous member (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the porous shaft seals, as taught by Honma in the modified Dahmlos apparatus, since the use thereof would have provided an excellent in uniformity of characteristics and furnished with high rigidity.

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9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claim 1 above, and further in view of Honma.

The modified Dahmlos discloses the invention as recited above; however, the modified Dahmlos device fails to disclose a range of a porosity and a flexural strength of the porous member. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the porous shaft seals based on the desired properties of the porosity and the flexural strength, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220F.2d 454,456, 105 USPQ 233, 235 (CCPA 1955) (see MPEP §2144.05).

10. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claims 1-3 above, and further in view of legal precedent.

The modified Dahmlos device discloses the invention as recited above; however, the modified Dahmlos device fails to disclose the shaft seal member comprises a plurality of substantially hollow-cylindrical shaft seal member pieces or the shaft seal member is formed by a single substantially hollow-cylindrical component. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the shaft seal member comprises a plurality of substantially hollow-cylindrical shaft seal member pieces, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893). *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) (see MPEP §2144.04). (see 11/075,942 – BPAI) or 10/789,469). Also, it would have been obvious to

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one having ordinary skill in the art at the time the invention was made, to have utilized the shaft seal member is formed by a single substantially hollow-cylindrical component, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlicnman*, 168 USPQ 177, 179.

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claims 1-3 above, and further in view of legal precedent.

The modified Dahmlos device discloses the invention as recited above; however, the modified Dahmlos device fails to disclose the shaft seal member being integrally formed with the bearing member. Kaneto device does show the shaft seal member 16a, 16b being on the bearing member 5. One having ordinary skill in the art would recognize that making the two elements integral would have been an obvious variant of the modified Dahmlos device teaching.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claim 1 above, and further in view of Schofield (Patent Number 6,200,116).

The modified Dahmlos device discloses the invention as recited above; however, the modified Dahmlos device fails to disclose an inner circumferential surface of the rotor cylinder of the screw rotor is formed in a tapered shape.

Schofield teaches that it is conventional in the art to utilize a gap between the outer circumferential surface of the bearing member 22, 23 and the inner circumferential surface of the rotor cylinder of the screw rotor 8, 9 is formed in a tapered shape so as to expand as approaching an exhaust side of an exhaust gas of the vacuum pump. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the porous

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shaft seals, as taught by Schofield in the modified Dahmlos apparatus, since the use thereof would have provided no oil or lubricant associated with the bearings can escape or contaminate the pump inlet area.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmlos in view of Kaneto as applied to claim 1 above, and further in view of design choice.

The modified Dahmlos device discloses the invention as recited above; however, the modified Dahmlos device fails to disclose a flow rate of the seal gas. It is examiner's position that one having ordinary skill in the vacuum pump art, would have found it obvious to have flow rate of the seal gas as claim, since they are merely design parameters, depending on the design variables as the viscosity of the lubricating fluid or depending on being particular purpose or solving a stated problem. Moreover, there is nothing in the record which establishes that the claimed flow rate, presents a novel of unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Prior Art

14. The IDS (PTO-1449) filed on Sept. 1, 2006 has been considered. An initialized copy is attached hereto.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents: Sternenberg et al. (U.S. Patent Number 5,525,047), Ohmi (U.S. Patent Application Publication Number 2006-0188383) and Yoichi et al. (Publication Number JP 63-285279), each further discloses a state of the art.

Conclusion

16. Applicant is duly reminded that a complete response must satisfy the requirements of 37 C.F.R. 1.111, including: "The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. A general allegation that the claims "define a patentable invention" without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section. Moreover, "The prompt development of a clear Issue requires that the replies of the applicant meet the objections to and rejections of the claims." Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP §2163.06 II(A), MPEP §2163.06 and MPEP §714.02. The "disclosure" includes the claims, the specification and the drawings.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa Trieu whose telephone number is 571-272-4868. The examiner can normally be reached on Monday-Friday 8:30am- 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

/Theresa Trieu/
Primary Examiner, Art Unit 3748